

Claims

- [c1] An ultrasonic wave flowmeter, comprising:
- a transmitter for transmitting an ultrasonic wave signal;
 - a receiver for receiving the ultrasonic wave signal which has been transmitted from the transmitter and has been propagated through a fluid;
 - a reception detecting section for receiving an output of the receiver and detecting the ultrasonic wave signal;
 - a delay section for receiving an output of the reception detecting section and outputting it to the transmitter so that the ultrasonic wave signal is transmitted again;
 - a counter for counting the number of detections by the reception detecting section;
 - a timer for repeatedly measuring a time period from the time when the transmission of the ultrasonic wave signal by the transmitter is started to the time when the counter reaches a predetermined value;
 - a calculation section for calculating a flow rate of the fluid, based on an output of the timer; and
 - a delay control section for controlling the delay section to change the delay time of the delay section each time the measurement by the timer is made.

- [c2] An ultrasonic wave flowmeter according to claim 1, wherein the delay control section controls the delay section to maintain the delay time of the delay section to be constant when an output of the calculating section is greater or equal to a predetermined value.
- [c3] An ultrasonic wave flowmeter, comprising:
a transmitter for transmitting an ultrasonic wave signal;
a receiver for receiving the ultrasonic wave signal which has been transmitted from the transmitter and has been propagated through a fluid;
a reception detecting section for receiving an output of the receiver and detecting the ultrasonic wave signal;
a first timer for measuring a time period from the time when the transmitter transmits the ultrasonic wave signal to the time when the reception detecting section detects the ultrasonic wave signal;
a second timer for measuring a time period from the time when the reception detecting section detects the ultrasonic wave signal to the time when an output of the first timer is changed; and
a calculation section for calculating a flow rate of the fluid, based on the time period measured by the first timer and the time period measured by the second timer.
- [c4] An ultrasonic wave flowmeter according to claim 3, wherein the second timer is corrected by the first timer.

- [c5] An ultrasonic wave flowmeter according to claim 3, further comprising a temperature sensor, wherein the second timer is corrected by the first timer when the change in an output of the temperature sensor is greater or equal to a predetermined value.
- [c6] An ultrasonic wave flowmeter according to claim 3, further comprising a power supply voltage sensor for detecting a power supply voltage for a circuit, wherein the second timer is corrected by the first timer when the change in an output of the power supply voltage sensor is greater or equal to a predetermined value.
- [c7] An ultrasonic wave flowmeter according to claim 3, wherein the second timer is corrected by the first timer immediately after the measurement of time by the second timer.